WAO ATUA

MARAMATAKA INFORMED CULTURAL ENVIRONMENTAL INDICATOR DEVELOPMENT

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Sustainable Seas National Science Challenge
Tangaroa Programme
Project T3 Ngā Tohu o te Ao
Utilising Maramataka as a Framework for Marine Management

Prepared on behalf of Ngā Tou Research Collective:

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TE RAU O TE AROHA

Tau ana taku manu ki Te Paki
Ki te pae urunga o Tohe
Heke iho te titiro ki Ngā Keketo
Ngaro atu ngā rimu o uta
Ngaro atu ngā rimu o tai
Mārama mai te mauri nuku
Mārama mai te mauri rangi e

Ka topa taku rere i ngā au o te moana
Poupoua ki Ōtāwhiwhi
Ki Raropua, te Kōkotaroa
Ki Rangatāua ngā ngāngara nui ō tai whanake
Mārama mai te mauri nuku
Mārama mai te mauri rangi e

Ka rere iho rā ki te Pākirikiri
Ka rere ko Te Waiotu,
Ka rere ko te Mangahauini
He marangai nui, he marangai roa
he waituhi, he waituke e

Horonuku, hororangi
Horo ana ko te rau o te aroha
Tau ana

This pātere, titled 'Te Rau o te Aroha' follows the flight of a manu as it visits each of the Ngā Tohu whānau research areas. It begins its journey in Te Hiku, at Lake Ngā Keketo, surrounded by the hills of Tohe, a significant ancestor of Ngāti Kurī. The pātere alludes to the historic clearing of native forests and the loss of culturally significant marine species. It encourages whānau to explore ancestral knowledge to support the restoration of ancestral lands and sea.

Continuing on its flight, the manu reaches Tauranga Moana, where it acknowledges three research areas: Ōtāwhiwhi, Raropua and Rangataua. The pātere then references the Asian Paddle Crab, the collective research group's focus species. This invasive species is also used as a metaphor to evoke the ongoing pressure on Tauranga costal environments and urges whānau to seek ancestral wisdom to guide marine-management practices.

Finally, the manu settles in Tokomaru Bay, near the rivers of Te Waiotu and Te Mangahauini. Here, it expresses deep sorrow for the tragic losses caused by the storms and floods in previous years, sending unconditional love to those affected.

This pātere was written in acknowledgment of all three whānau research groups' significant contributions. It acknowledges and honours the sacred ancestral spaces that formed the project's foundation and provided inspiration and motivation for each whānau research group. Finally, it acknowledges tūpuna, past, present and future, who have guided the project: e kore e mimiti ana te aroha.

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KUPU WHAKAURU INTRODUCTION

In the pursuit of sustainable and inclusive environmental management, the integration of cultural perspectives, traditional knowledge and Indigenous practices, have become increasingly important. Cultural Environmental Indicators (CEI) play a pivotal role in capturing the social, spiritual and ecological dimensions of human-environment relationships. They provide a framework for understanding and valuing diverse cultural perspectives, ensuring that environmental management strategies and policies are culturally responsive, equitable and holistic.

Ngā Tohu research programme aims to develop CEI praxis by reclaiming maramataka knowledge and practice. Rooted in Māori traditions, maramataka provides a holistic, interconnected understanding of celestial movements, seasons, natural resources and human activities; it embodies the wisdom and cultural practices, passed down through generations, which have nurtured deep connection with the natural environment. It is for these reasons that maramataka has been examined to support in the development of CEI theory.

Early in the Ngā Tohu project, it was recognised that, in order to appropriately utilise maramataka in developing CEI, the creation of rāhui (cultural reserve) was necessary. Although ultimately intended to support the theoretical development of CEI, the project did not seek to integrate maramataka into existing CEI approaches; instead, the focus was on first creating space to reclaim and revitalise maramataka-specific practices and knowledge within whānau research areas. This approach aimed, first, at preserving cultural practices within a Te Ao Māori context and, second, at gaining deeper understanding of the present-day application of maramataka and tohu (cultural indicators). By prioritising rāhui, the Ngā Tohu collective were able to identify essential entry points for reclaiming the space necessary to explore maramataka. These insights form the foundation of the Wao Atua framework.

The aim of this document is to introduce the Wao Atua framework, developed by the Ngā Tohu research collective to facilitate the reclamation of maramataka. This report delves into the framework's conceptual foundations, describing the principles that have supported its development and implementation.

WAIHANGA METHOD OF DEVELOPMENT

The Wao Atua framework is the result of a three-year collaborative exploration of maramataka, involving three Ngā Tohu whānau research teams,[1] project advisors and the core research team, who all contributed to the foundational thinking and design of the framework. The process was adaptive, allowing time for iterative design. The considerations that helped inform the development of a culturally responsive framework are described here -

ĀTA—TIME TO DEVELOP

The Wao Atua framework evolved organically as the programme progressed. The first iteration was developed mid-way through the project, allowing a full year-and-a-half to ground the programme in each research area. This first period focused on providing time for the whānau research groups to develop locally appropriate systems and processes. Given the varied environmental and social dynamics of each area, this time was crucial for establishing culturally responsive practices for developing tohu before exploring the theoretical framework.

HONO—COLLECTIVE THINKING

The goal was to create a framework that genuinely reflects the cultural values, contexts and experiences of each whānau research area. A collaborative, participatory process was employed, acknowledging communities' and knowledge holders' contributions and centring their voices and aspirations.

The Wao Atua framework's first iteration was developed during a collective wānanga, held at Waitaia Lodge, Tauranga. During the wānanga, all three whānau research groups reflected on key lessons and insights emerging from the programme. As a result, the Wao Atua framework was presented, and collectively refined; it continued to be fine-tuned, revisiting concepts and design, as the project progressed.

HĀNGAI—RELEVANT AND ALIGNED

The framework's progressive development allowed each whānau research team sufficient time to explore what was suitable and relevant for them, providing time to develop, trial and refine local methods. Thus, Wao Atua synthesises the key aspects of whānau-based research as defined by the whānau research groups.

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[1] *Ngātaki Collective in Te Hiku, Ngā Pāpaka in Tauranga Moana, and Pākirikiri wānanga in Te Ākau o Tokomaru.*

MARAMATAKA

The focus of the Ngā Tohu project was the reclamation of maramataka knowledge and practice. To better understand the positioning of the Wao Atua framework, it is important to understand maramataka. Maramataka is an interconnected environmental timing system; accordingly, multiple concepts were explored throughout the project in order to best understand its complex relationships.

Here, five key concepts that collectively underpin the Wao Atua framework are described: maramataka, mauri, tau, tikanga and tohu.

MARAMATAKA

Maramataka is an ancient Māori cultural timekeeping system, developed over centuries of intimate connections with the environment. It utilises the sun, stars, movement of the moon and expressions of taiao in any given month or season to determine appropriate timing for certain activities. Maramataka knowledge is still held by cultural practitioners (pūkenga, mātanga, tohunga) and preserved in repositories of ancestral knowledge; to this day, it continues to inform interactions with the environment and guide ecosystem management.

MAURI

Mauri is an integral part of the Māori worldview, underpinning understanding of the universe and the interconnectedness of nature and humanity. It is the life force, or essential vitality, inherent in all animate and inanimate things. Mauri is the binding force that ignites and gives life; it is critical to the health and well-being of the environment and the people who interact with it. When mauri is flowing, living cells are energised; this energy ignites and activates life: if mauri does not flow, life cannot regenerate.

TAU

Tau is used to describe a complete cycle. In terms of maramataka, tau are the recurrent, predictable processes that occur in taiao. Tau inform us that all living things follow intrinsic cycles that move independently of tāngata.

TIKANGA

Tikanga are the logical patterns of taiao, that follow natural tau cycles. They represent the laws governing the processes and cycles of regenerative life. They teach us that every living entity adheres to a pattern, or blueprint, for life; a natural order, based on inherent laws, which reveals what is necessary and essential for mauri to flow and life to thrive. Tikanga as applied in Ngā Tohu, follow a tau, a cycle of life.

TOHU

Tohu are expressions of mauri; they tell the story of how mauri moves and behaves in taiao. Aligning with tau and tikanga, they vary according to the season, time and phase in the natural cycle. Tohu are observed through tiro, a cultural practice of environmental observation. Although the potential for tohu is everywhere, they have a distinct practical function, they reveal the appropriate and acceptable timing of, and interaction with taiao. Whether single, a collection or a series, tohu help track tau, tikanga and mauri, thereby guiding when, and what, activities could, or should, be undertaken, according to the particular time and spacel
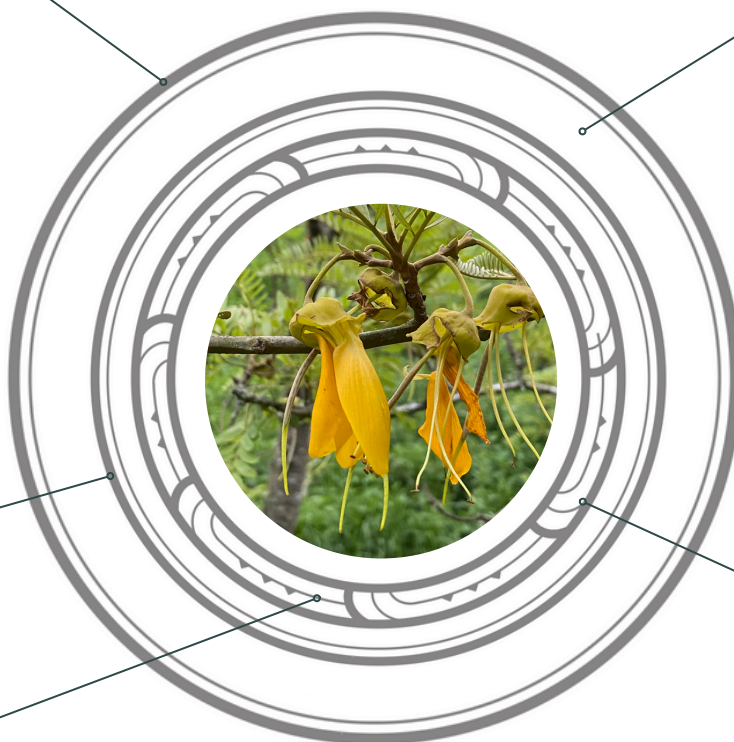
WAO ATUA FRAMEWORK

Maramataka is a cultural environmental-timing system that tracks mauri, tau, tikanga and tohu. These components are intricately interconnected and understanding them contributes to a holistic, inclusive understanding of maramataka. Mauri is the life energy that flows through environmental systems; tau tells us that mauri moves in predictable cycles; tikanga explains that mauri follows logical patterns, observable in seasonal transformations; and tohu, are expressions of mauri, serving as indicators that can be tracked and monitored through maramataka.

Ngā Tohu sought to reclaim understanding of the whole maramataka system, including mauri, tau, tikanga and tohu. The Wao Atua framework represents a systematic approach to reclaiming knowledge and practice. It was developed to illustrate the essential landing points required to develop tohu from a Ngā Tohu perspective. The following section describes three non-negotiable components of the Wao Atua framework and provides examples of how each has been developed and applied within the Ngā Tohu project.

WAO ATUA
CONNECTING TO
PEOPLE AND PLACE

WAO TŪPUNA
CONNECTING TO
ANCESTRAL KNOWLEDGE

WAO TĀNGATA
CONNECTING TO
ANCESTRAL PRACTICE

WAO ATUA CONNECTING TO TAIAO

In the context of Ngā Tohu, Wao Atua refers to the spaces governed by Atua Māori, such as Te Wao Nui a Tangaroa and Te Wao Tapu Nui a Tāne, recognising them as source points of mauri. Each Wao Atua functions as a logical system of energy activation and transition, interconnected and interdependent. The system's regenerative capacity is determined by the movement and transfer of mauri through each living element of Wao Atua. This function of Wao Atua is the foundation for life on earth.

Wao Atua is a fundamental component of the framework. Wao Tūpuna and Wao Tāngata cannot exist without connection to Wao Atua. This dictates that reclamation of maramataka knowledge and practice must be positioned within a living Wao Atua system. In the context of Ngā Tohu, Wao Atua refers specifically to the natural living systems, the taiao systems, in which each whānau based their research, including significant cultural wāhi (places) and taonga (culturally significant species):

- **Ngātaki Collective:** Waiora Marae; Ngā Keketo; Te Hiku o te Ika; Houhora; Te Rarawa; Te Oneroa a Tohe: Taonga—pipi, hūai, pīngao, rātā moehau, kahikātoa.

- **Tauranga Moana:** Otāwhiwhi; Raropua; Matapihi; Te Awanui; Te Awaroa: Taonga—pāpaka, Asian paddle crab, wheke.

- **Pakirikiri Wānanga:** Pākirikiri Marae; Te ākau o Tokomaru; Te Mangahauini; Te Waiotū: Taonga—pāua, koura.

WAO TŪPUNA CONNECTING TO ANCESTRAL KNOWLEDGE

Wao Tūpuna, as an ancestral knowledge system, is vast and complex. It holds knowledge of the intricate systems of Wao Atua, the complex and dynamic flow of mauri, the timing and transition points of energy and the seasonal expression of tohu; it also guides the appropriate positioning of tangata within Wao Atua.

Wao Tūpuna positions ancestral knowledge as a critical component of maramataka reclamation, emphasising the retrieval and revitalisation of ancestral knowledge through thoughtful cultural exploration. In the Ngā Tohu project, this involved searching ancestral knowledge repositories such as whakapapa, pūrākau and karakia. It also entailed creating appropriate spaces for wānanga and kōrero, ensuring that exploration was guided and informed by cultural experts, including pūkenga taiao and mātanga reo. Here, three essential elements of Wao Tūpuna are outlined.

- **Whenua**—Preparing appropriate cultural spaces for reclaiming ancestral knowledge. Carefully considered spaces were created to ensure the well-being of each whānau research group. These included marae-based wānanga, onsite visits to Wao Atua spaces and facilitated workshops. It was crucial that these spaces were tailored to allow safe exploration of Wao Tūpuna knowledge.

- **Tipu**—Deep exploration of Māori language, focusing on kupu. Supported and guided by project advisors and mātanga reo, this stage delved into the inner meanings of kupu, examining their structure, inner coding and relationships within the broader maramataka system.

- **Hua**—Focused on developing resources and products based on reclaimed maramataka knowledge, each tailored to the needs of the whānau research groups. These resources aimed to create usable tools to guide maramataka practice and to enable sharing of reclaimed ancestral knowledge with local communities.

WAO TĀNGATA CONNECTING TO ANCESTRAL PRACTICE

Wao Tāngata serve as points of human interaction with Wao Atua. As Wao Tūpuna dictates, any activities or interactions with Wao Atua must allow for the continued flow of mauri. Activities that disrupt or inhibit the natural energy flow impede the productive capacities of Wao Atua, and its ability to support human needs. Wao Tāngata positions humans within Wao Atua, carrying the inherent obligation and responsibility to ensure that interactions take account of, and respect, the whole system.

Wao Tāngata emphasises ancestral practice as an essential component of reclaiming maramataka. In the Ngā Tohu project, this involved applying reclaimed ancestral knowledge in-situ, enabling a more grounded understanding of Wao Tūpuna and cultivating deeper relationships with Wao Atua. Through trial and error, whānau were able to explore the application of ancestral knowledge, developing maramataka practice relevant to their specific research area. Although the application of Wao Tāngata varied among the whānau research groups, as a collective, two cultural practices, tirotiro and rūnanga were explored in depth -

- **Tirotiro**—is a cultural-observation practice grounded in Māori cultural understanding. Tirotiro involves deep exploration of taiao, delving into the intricate details of natural environmental cycles and processes. This practice layers observations to weave together the complex tapestry of taiao. In a dedicated effort to reclaiming tirotiro practice, all researchers committed to a full year of tirotiro, which involved selecting a Wao Atua system and actively observing and tracking tohu throughout the seasons.

- **Rūnanga**—is a cultural practice that involves convening a collective or council of experts to discuss community matters. It acknowledges each member's valuable knowledge and understanding in their respective fields of expertise. In the context of Ngā Tohu, rūnanga served as a platform for collective reflection and analysis of tirotiro. As part of the commitment to a full year of tirotiro, rūnanga were scheduled each month, providing space and time to reflect and share observations and lessons from the previous month.

KUPU WHAKAKAPI FINAL REMARKS

The Wao Atua framework represents a significant effort to build understandings and strategies for reclaiming maramataka to inform CEI development. Although the project primarily focused on entry points for reclaiming maramataka rather than integrating it into CEI, the insights gathered can assist those looking to advance applied CEI praxis. Through the development of the Wao Atua framework, three significant points arise:

- The importance of creating dedicated rāhui spaces for reclaiming maramataka praxis, has ensured that cultural practices are revitalised in safe, culturally appropriate and meaningful ways, without the tensions that could potentially arise from premature integration into existing CEI systems.

- The value of collaborative efforts. The participatory approach not only enriched the framework with diverse perspectives but, ensured that it resonated with the specific needs and cultural practices of whānau. Recognising that one size does not fit all, the framework's development was marked by an adaptive, iterative design process. This allowed for continuous refinement based on feedback and changing conditions, demonstrating the value of a flexible approach to integrating traditional knowledge and contemporary practices.

- The importance of three interconnected components: *Wao Atua, Wao Tūpuna* and *Wao Tāngata*, each playing a critical role in developing and delivering the project: Wao Atua focuses on connecting to culturally significant natural spaces. Wao Tūpuna deals with accessing and revitalising ancestral knowledge, ensuring that the wisdom of past generations continues to inform present and future practices. Wao Tāngata applies this knowledge through cultural practice, reinforcing connection to the environment.